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## A Decade of USDA-ARS Predator Research, 1972-1982

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Federal government restrictions in 1972 on several widely-used forms of predator control stimulated research on alternative methods of reducing depredation on livestock. In the same year, the U.S. Department of Agriculture began predator research through the Agricultural Research Service (ARS) and designed the U.S. Sheep Experiment Station (USSES) near Dubois in southeastern Idaho as the principle location for the investigations.

At the outset, the objective of ARS research was to examine non-lethal methods for reducing depredation, primarily by coyotes (Canis latrans), on sheep. During the first several years, while predator research facilities were constructed at the USSES, ARS funds were primarily used for extramural predator projects at universities in the western United States. Beginning in 1973 and extending from 3 to 5 years each, 3 extramural projects in addition to in-house research at USDA-ARS Western Regional Research Center (WRRRC) sought to determine the efficacy of repellents (aversive, olfactory, and gustatory agents) for deterring coyote predation on sheep. Several hundred compounds were tested, and the funds indicated that, although some compounds provided temporary protection to sheep, repellents were not consistently nor sufficiently effective to be viewed as a realistic method of reducing coyote depredation.

ARS funded other university studies that concluded that annoying sound was not likely to be an effective deterrent to coyote depredation and that artificial density stimuli were not effective in reducing coyote reproductive success.

Beginning in 1973 and continuing to the present, research on *identification* and testing of antifertility agents for coyotes has been conducted at the USSES. The current effort on this objective is minor, and no single compound has been identified that meets specific requirements of effectiveness, selectivity, and acceptability.

In addition to pioneer work at the USSES in 1977, 3 extramural studies were funded from 1973 to 1980 to examine the use of electric fencing to exclude coyotes from sheep. Certain configurations of electric fencing were found to be effective, and fencing is now viewed as a viable means of reducing depredation.

In addition to fencing, the single other effective non-lethal technique of controlling predation studied by ARS was livestock guarding dogs. Research at the USSES and 2 universities from 1977 to present has shown that dogs can be a significant asset in protecting sheep in a variety of conditions including fenced-pasture and open-range grazing.

ARS has conducted and funded research on chemical attractants from 1973 to present. Several compounds developed at the WRRRC are highly attractive to coyotes thus enhancing the effectiveness of several existing methods of control (trapping, M-44s). ARS is now testing various methods of delivering baits and other compounds to coyotes. Should toxicants be cleared for predator control or suitable antifertility compounds be identified, attractants and delivery devices will be necessary for field deployment.

ARSafunded research has produced information on various aspects of coyote biology. A wide range of knowledge is advantageous for the successful management of such a versatile predator.

LITERATURE RESULTING FROM PREDATOR RESEARCH FUNDED BY USDA-ARS

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